PROGRESS

OF

MEDICAL SCIENCE.

THERAPEUTICS.

UNDER THE CHARGE OF

REYNOLD W. WILCOX, M.D., LL.D.,

PROFESSOR OF MEDICINE AND THERAPEUTICS AT THE NEW YORK POST-GRADUATE MEDICAL SCHOOL AND HOSPITAL; VISITING PHYSICIAN TO ST. MARK'S HOSPITAL.

The Saponins.—M. G. POUCHET points out that these occur in a very large number of plants under a variety of names, as, digitonin, gratiolin, lychnin, githagin, senegin, cyclamin, smilacin, quillagic and polygalic acids. These, which might better be called sapotoxins, differ much in their therapeutic and toxic properties. The method of preparation also has much to do with their activity: by maceration the plant may yield substances of remarkable toxicity; if isolated by appropriate chemical methods they may be almost inactive. If obtained by the latter method they occur as an amorphous powder, which varies in color from white to yellow, and is first of a sweetish, later of a bitter, styptic and burning taste. They are soluble in all proportions in water, slightly or not at all in alcohol. They may be divided into two groups: (1) Neutral or (2) of acid reaction. The latter are distinguished by their solubility in alcohol and by their marked toxicity. They are all lævogyre, their aqueous solutions form emulsions, and they dissolve without water in such substances as lead sulphide and barium carbonate. Chemically they are glucosides. Physiologically they act upon the heart, more or less, as does digitalin, but they show in addition an intense action upon the medulla, which manifests itself by convulsions and asphyxia, from which the animals experimented upon die. They are poisons to the central nervous system and to the heart. If given by the mouth their action upon the nervous system is *nil*, but they irritate more or less violently the intestinal mucous membrane, and further, they are caustic. When given hypodermatically they determine death of the tissues at the point of injection. The acid varieties given intravenously produce results differing according to the doses. If these are large, death follows in a few seconds, preceded by convulsions and paralysis of the nervous centres. In smaller doses dysenteric manifestations are present (hyperæmia, bloody extravasations, œdema of the wall of the intestine, hyaline thromboses, necrosis of the mucous membranes).

Further, ecchymosis and necrotic patches have been found in the pericardium. Then death occurs after some hours. From small doses symptoms of poisoning come on more slowly, and death from collapse supervenes. There are no intestinal symptoms, but a marked lowering of temperature precedes the fatal issue. They dissolve red blood-corpuscles and cause hæmaturia. If the mucous membrane is healthy they are absorbed with difficulty; if abraded they are likely to give rise to symptoms of poisoning. Repeated applications to the skin produce a painful pustular eruption followed by sloughing. Calling attention to the reputation which senega has among the Indians as a remedy for snake-bite, it is suggested that the saponin contained in the root may be antitoxic to venom, comparable or even identical with the antitoxin contained in Calmette's antivenin. Bretonneau recommended senega for the treatment of various bronchial and pulmonary diseases. It slows the pulse and increases cough and expectoration, but should not be exhibited when the stomach is in bad condition, nor in fever. Nor, indeed, should dentifrices containing saponin be employed unless the gums are healthy. Further, it is believed that many of the symptoms and even the lesions which are common in poisoning from plants containing these substances should be attributed to them.—*Bulletin Général de Thérapeutique*, 1898, 6e liv., p. 193.

Strophanthus in the Treatment of Cardiac Disease.—DR. H. JACOBAEUS makes use of the tincture, reporting nine instances. In under-compensated hearts this remedy can be used for many months without interruption, without producing digestive disturbances. Cumulative effects (so-called) are not so often seen as from digitalis. The method of administration is to commence with daily amounts of twenty drops, gradually increasing to double this amount, and as soon as diuresis and improvement in general and circulatory conditions result, to return gradually to the initial amount.—*Klinisch-Therapeutische Wochenschrift*, 1898, Nos. 11, S. 346; 12, S. 390; 13, S. 430; 14, S. 462.

Are the Fluid Preparations of Digitalis Active when Manufactured into Tablets?—DR. E. M. HOUGHTON has conducted some very careful experiments upon animals, for in this way can be exactly studied the action upon the various organs. It was developed that the quantity of active constituents in different samples, as shown by physiological examination, varied considerably. The fact that some tablets have been demonstrated to be inert is quite likely due to this variation; the fault then being in the fluid preparation and not in tablets made from it. The general conclusion is that active fluid preparations of digitalis do not lose in activity by being made into tablets, nor do the tablets become less active by keeping, than do other preparations of digitalis.—*Therapeutic Gazette*, 1898, No. 4, p. 217.

The Treatment of Diseases of the Heart.—DR. R. DOUGLAS POWELL, in writing of digitalis, believes that the more common mistake is the prescribing of too large a dose at first, which tends to produce premature arterial contraction and cumulative effects. Then, with the appearance of these physiological symptoms the drug is stopped, and other medicine substituted, until the pulse calls for its administration. In this hap-hazard way the heart is never held in good control. If there is urgent need to push the drug, digitalin is best used subcutaneously. In ordinary cases a dose of 10 minims of the tincture every four, or 15 every eight, or 5 minims every waking hour is sufficient. This given, the patient being at rest, it generally takes about three days before the pulse is under control and the urine begins to increase. When decided effects are produced the drug should be steadily continued in doses calculated to maintain its effect. With ordinary watchfulness there is no risk; timely warning of excess is given by the pulse, which, having become slow, begins to exhibit small intermediate beats, and especially a tendency to go in couples. The sickness which comes with the drug is best relieved by an occasional mercurial or a change to digitalin, or a tumblerful of hot water taken occasionally. In some cases it may be necessary to omit the drug altogether.—*British Medical Journal*, 1898, No. 1944, p. 869.

Experimental Thyroidism.—Dr. R. H. Cunningham presents the results of a careful review of the literature and painstaking laboratory work as follows: (1) Absolutely fresh thyroid gland is not poisonous, in the usual sense of the term, when absorbed through the alimentary canal. (2) The symptoms of induced thyroidism are manifestations of an intoxication resulting from the ingestion of decomposed thyroid material. (3) The so-called experimental thyroidism is not specific for the thyroid only, for the ingestion of many substances derived from animal tissues other than the thyroid gland may produce an intoxication strikingly similar in every respect to that of experimental thyroidism. (4) Most, if not all, animal tissues yield substances which, if injected in large quantities directly into the circulation or beneath the skin, will produce an intoxication often very similar to that produced by injections of various substances derived from the fresh thyroid tissue. (5) The effects resulting from the intravascular or subcutaneous injections of aqueous extracts, decoctions, and the concentrated extractives of the thyroid tissues, of the thymus, of muscle, etc., are by no means necessarily indicative of the function and the action of the hypothetical internal secretions of the same tissues during life. (6) The utilization of the fact that ingestion of decomposed thyroid material produces on certain occasions an intoxication with certain symptoms similar to some of those of Graves's disease is not justifiable for the furtherance of the theory that the symptoms of exophthalmic goitre result from an over-production of the thyroid secretion. (7) The results of this investigation lead to the conclusion that the fresh thyroid tissue yields at least probably two substances that are capable of palliating the symptoms of the acute cachexia in totally thyroidless dogs. (8) The thymus tissue also yields one and probably two substances that are equally capable as the thyroid extractives of palliating the acute cachexia of totally thyroidless dogs. (9) Neither of the above substances is an enzyme, nor does either contain iodine. (10) Neither the feeding of minced raw thyroid glands nor the injection of aqueous thyroid extracts, decoctions, and concentrated solutions of the extracted palliative thyroid principles is capable of keeping totally thyroidless dogs alive longer than a few weeks (possibly three weeks). Still less capable are the thyroid preparations containing decomposition products. (11) The presence of one, or usually several, small accessory thyroid bodies which gradually hypertrophy and wholly or partially assume the functions of the excised thyroid lobes, accounts for the occasionally long